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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,616	09/27/2000	Masakazu Nishikawa	Q58116	6123

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Sughrue Mion Zinn MacPeak & Seas
2100 Pennsylvania Avenue N W
Washington, DC 20037-3202

EXAMINER
BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
1773	14

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/670,616	NISHIKAWA ET AL.	
	Examiner	Art Unit	
	Kevin M Bernatz	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5 and 21-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,5 and 21-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Amendments to the specification and claims 1, 2, 4, 6, 8 – 10, 12 – 16 and 18 - 32, filed on May 30, 2003, have been entered in the above-identified application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Request for Continued Examination

3. The Request for Continued Examination (RCE) under 37 CFR 1.53 (d) filed on May 30, 2003 is acceptable and a RCE has been established. An action on the RCE follows.

Claim Rejections - 35 USC § 103

4. Claims 1, 4, 5 and 21 – 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuyama et al. ('607) in view of Mimura et al. (U.S. Patent No. 6,368,722 B1) and Hosoi et al. ('794).

Regarding claim 1, Okuyama et al. disclose a floppy disk comprising a base material (*Figure 4, element 1 and col. 10, lines 35 – 40*) and, sequentially formed on at least one surface of said base material, a metal seed layer (*Figure 4, element 6 and col. 15, lines 43 – 55: "Ti"*) a primer layer (*Figure 4, element 2; col. 7, lines 17 – 20; and col. 12, lines 60 – 62: "CrMo"*) a magnetic layer (*Figure 4, element 3 and col. 9, lines 20 -*

30), a protective layer (*Figure 4, element 4*) and a lubricant layer (*col. 11, lines 58 – 67*), wherein said base material comprises a nonmagnetic flexible support member (*col. 10, lines 35 – 40*). The limitations "floppy" and "flexible" were interpreted as in Paragraph 9 of the Office Action mailed October 22, 2001 (Paper No. 3), i.e. any non-glass, ceramic, silicon or carbon substrate.

With regard to the limitations in the relative linear expansion coefficients and relative tensile strengths of the seed layer to the primer layer, the Examiner takes the position that these limitations would necessarily be present in the embodiments of the prior art since the claimed and prior art seed and primer layers are identical in composition and structural location. The examiner's sound basis for this assertion is the comparison of the disclosed Okumura et al. metal seed layer ("Ti") and primer layer ("CrMo") versus applicants' disclosed materials for use as the metal seed layers ("preferably contains at least one type of metal of Ta, Mo, W, V, Zr, Cr, Rh, Hf, Nb, Mn, Ni, Al, Ru, Ti and Si, ..." page 9, lines 17 – 22) and primer layers ("it is preferable to use chromium or an alloy containing chromium an at least one type of metals of Ti, W, Mo, V, Ta, B, Si, Nb, Zr, Al and Mn" page 10, lines 7 – 13). Since the linear expansion coefficient and tensile strength are material properties, since Okumura et al. disclose essentially identical materials as applicants, the Examiner deems that there is sound basis for believing that the disclosed property limitations would necessarily be present in the prior art products.

Okumura et al. fail to disclose forming the above layers on both sides of the substrate.

However, Hosoi et al. teach that it is known in the art that magnetic layers can be formed on one or both sides of a substrate and it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Okumura et al. to use a double-sided magnetic disk as taught by Hosoi et al., since a double-sided magnetic disk would effectively double the amount of data that could be stored on the recording medium.

Neither Okumura et al. nor Hosoi et al. disclose a base material meeting applicants' claimed thickness range, nor possessing a heat resistant macromolecular flattening layer on surfaces of the support member meeting applicants' claimed material limitations.

However, Mimura et al. teach a base material for a magnetic recording medium (*col. 1, lines 5 - 10*) comprising a nonmagnetic flexible support member with a thickness in the range of 30 – 150 μm (*col. 2, lines 3 – 8, 25 – 28 and 44 – 45; col. 4, lines 49 – 52; and col. 5, lines 55 – 57*) and formed on both surfaces of said nonmagnetic flexible support member a heat-resistant macromolecular flattening layer, wherein said heat-resistant macromolecular flattening layer comprises at least one type of silicone resin, polyimide resin, polyamideimide resin or polyamide resin (*col. 2, lines 44 – 45; col. 3, lines 1 – 8; and col. 4, lines 49 – 52*). Mimura et al. further teach that such a composite base material possesses a high degree of flatness, good adhesion properties and excellent heat resistance (*col. 1, lines 54 – 58 and col. 6, lines 1 - 9*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Okumura et al. in view of Hosoi et al.

to utilize a composite base material meeting applicants' claimed thickness and material limitations as taught by Mimura et al. since such a composite base material possesses a high degree of flatness, good adhesion properties and excellent heat resistance.

Regarding claims 4 and 5, Mimura et al. disclose that the flattening and support layers preferably have a thickness meeting applicants' claimed range limitations (*col. 5, lines 52 – 57 and examples*).

Regarding claim 21 - 24, Mimura et al. disclose that the flattening layer possesses inorganic oxide fillers meeting applicants' claimed size limitations (*col. 4, lines 37 - 45*). The Examiner notes that fillers added to the coating layers on magnetic bases are known to necessarily form micro-projections, since the fillers are added to roughen the film surface to provide adequate running properties for the medium (*see Hosoi et al., col. 2, lines 55 – 60, for example*).

The limitation "wherein the temperature of the support member during the formation of the metal layer is within the range of 10 – 200 °C" is a product-by-process limitation and is not further limiting in so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. ***The patentability of a product does not depend on its method of production***. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." [emphasis added] *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113. Once a product appearing substantially identical is found,

the burden shifts to applicant to show an ***unobvious*** difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

In the instant case, Okumura et al. disclose depositing that the metal seed layer is a material identical to applicants' disclosed materials, i.e. Ti, (*col. 11, lines 50 – 57*) and that it can be deposited on a wide variety of flexible substrates (*col. 10, lines 35 – 40 and 50 – 55*).

Regarding claims 27 – 30, Okumura et al. disclose magnetic layer compositions meeting applicants' claimed composition limitations (*col. 9, lines 45 – 65*).

Regarding claims 31 and 32, Okumura et al. disclose primer layers meeting applicants' claimed composition limitations (*col. 13, lines 42 – 45 and examples*).

5. Claims 1, 4, 5 and 21 – 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuyama et al. ('607) in view of Hosoi et al. ('794), Sueoka et al. (WO 99/020463) and Saito et al. (JP 10-021529 A). See the provided Machine Translation of JP '529 A, as well as U.S. Patent No. 6,358,619 B1, which is the U.S. equivalent to WO '463.

Regarding claims 1 and 5, Okuyama et al. disclose a floppy disk comprising a base material (*Figure 4, element 1 and col. 10, lines 35 – 40*) and, sequentially formed on at least one surface of said base material, a metal seed layer (*Figure 4, element 6 and col. 15, lines 43 – 55: "Ti"*) a primer layer (*Figure 4, element 2; col. 7, lines 17 – 20; and col. 12, lines 60 – 62: "CrMo"*) a magnetic layer (*Figure 4, element 3 and col. 9,*

lines 20 - 30), a protective layer (*Figure 4, element 4*) and a lubricant layer (*col. 11, lines 58 – 67*), wherein said base material comprises a nonmagnetic flexible support member (*col. 10, lines 35 – 40*). The limitations "floppy" and "flexible" were interpreted as described above.

With regard to the limitations in the relative linear expansion coefficients and relative tensile strengths of the seed layer to the primer layer, the Examiner takes the position that these limitations would necessarily be present in the embodiments of the prior art for the reasons cited above.

Okumura et al. fail to disclose a base material meeting applicants' claimed thickness range, nor possessing a heat resistant macromolecular flattening layer on surfaces of the support member meeting applicants' claimed material limitations.

However, Sueoka et al. teach a base material for a magnetic recording disk (*col. 6, lines 20 - 32*) comprising a nonmagnetic flexible support member (*col. 3, lines 30 – 34 and col. 6, lines 35 - 36*) and formed on at least one surface of said nonmagnetic flexible support member a heat-resistant macromolecular flattening layer, wherein said heat-resistant macromolecular flattening layer comprises at least one type of silicone resin, polyimide resin, polyamideimide resin or polyamide resin (*col. 3, lines 30 – 34 and col. 6, lines 28 - 30*). Sueoka et al. further teach that such a composite base material possesses good mechanical characteristics as well as good abrasion resistance (*col. 1, lines 6 – 12*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Okumura et al. to utilize a composite

base material meeting applicants' claimed material limitations as taught by Sueoka et al. since such a composite base material possesses a good mechanical characteristics as well as good abrasion resistance.

Neither Okumura et al. nor Sueoka et al. disclose forming the above layers on both sides of a disk substrate, not using flexible support members meeting applicants' claimed thickness range. It should be noted that while Sueoka et al. appear to teach away from using a double sided recording medium (*col. 5, lines 56 – 62 and col. 10, lines 16 – 22*), the above teachings of back-coat layers are specific to magnetic ***tapes*** and not magnetic ***disks*** (*"prevention of wrinkling and weaving caused at the time of film winding..."*). Since Sueoka et al. clearly teach that the invention is applicable to both tapes and disks (*"The form of the magnetic recording medium is not especially limited to a disc, card or tape, etc." col. 6, lines 31 – 32*), the Examiner deems that one of ordinary skill in the art would have readily appreciated that a magnetic ***disk*** would not require the back-coat layers typical of magnetic ***tapes*** since they are not wound up for storage.

However, Hosoi et al. teach that it is known in the art that magnetic layers can be formed on one or both sides of a substrate and it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Okumura et al. in view of Sueoka et al. to use a double-sided magnetic disk as taught by Hosoi et al., since a double-sided magnetic disk would effectively double the amount of data that could be stored on the recording medium.

In addition, Saito et al. teach the importance of controlling the thickness of the flexible support member of a magnetic ***disk*** to within applicants' claimed range for appropriate rigidity, durability and overall physical properties depending on the diameter of the disk (*Paragraphs 12 and 13 of the Machine Translation*). The Examiner deems that it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the thickness of the flexible support member through routine experimentation, especially given the teaching in Saito et al. regarding the desire to optimize the thickness relative to the diameter to produce flexible magnetic recording disk substrates. *In re Boesch*, 205 USPQ 215 (CCPA 1980); *In re Geisler*, 116 F. 3d 1465, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Aller*, 220 F.2d, 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 4, Sueoka et al. teach that the flattening layer thickness can be varied to effect the physical properties, e.g. "winding form" (*col. 6, lines 46 – 51 and examples*). Sueoka et al. further teach that inorganic particles are contained within the layer and the layer thickness must be sufficient to both form the appropriate protrusion concentrations and bind the particles (*col. 5, lines 43 – 50 and col. 5, line 66 bridging col. 6, line 8*). Therefore, the Examiner deems that it would have been obvious to one having ordinary skill in the art to use a thickness value of the flattening layer meeting applicants' claimed thickness limitation by optimizing the results effective variable through routine experimentation.

Regarding claim 21 - 24, Sueoka et al. disclose that the flattening layer possesses inorganic oxide fillers meeting applicants' claimed size limitations (*col. 5,*

lines 43 – 50 and col. 5, line 66 bridging col. 6, line 8) inorder to insure good electromagnetic conversion properties and durability of the medium.

The limitation "wherein the temperature of the support member during the formation of the metal layer is within the range of 10 – 200 °C" is a product-by-process limitation and is not further limiting in so far as the structure of the product is concerned for the reasons cited above.

Regarding claims 27 – 30, Okumura et al. disclose magnetic layer compositions meeting applicants' claimed composition limitations (*col. 9, lines 45 – 65*).

Regarding claims 31 and 32, Okumura et al. disclose primer layers meeting applicants' claimed composition limitations (*col. 13, lines 42 – 45 and examples*).

Response to Arguments

6. The rejection of claims 1, 9 and 15 under 35 U.S.C § 102(e) – Okuyama et al.

The rejection of claims 2, 4 – 6, 8, 10, 12 – 16, 18 and 19 under 35 U.S.C § 103(a) – Okuyama et al. in view of Hosoi et al.

The rejection of claim 20 under 35 U.S.C § 103(a) – Okuyama et al. in view of Hosoi et al., Okudaira et al. and Maro et al.

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

The above noted rejection has been withdrawn because applicant(s) amendment(s) have set forth new limitations (e.g. "formed on both surfaces of said base material"), as well as the new combination of limitations (e.g. "heat-resistant

macromolecular flattening layer ... comprises at least one type of ... polyamide resin" and "wherein the linear expansion ... S_{SE}/S_{UL} >1") no longer anticipated, nor rendered obvious, by the above noted rejection.

In so far as they apply to the present rejections of record, the Examiner notes that applicants' have provided additional comparative evidence to illustrate unexpected results when a range in substrate thickness are used, but have not provided this in an affidavit or declaration format. The Examiner reminds applicants' that attorney arguments are not considered evidence and the Examiner recommends providing the comparative data in a signed declaration should applicants' wish to pursue a showing of unexpected results.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maro et al. ('801) provides evidence that the linear expansion of the various layers are known to effect cracking during medium formation and that metal layers formed between Cr alloy underlayers and resin substrates prevent such cracking, though there is no mention of the relative linear expansion coefficients or tensile strengths of the various layers (*col. 2, lines 8 – 18*). Takagi et al. (U.S. Patent No. 5,139,849) teach a flexible support member with a polyimide coating layer comprising inorganic oxide particles for use as a base material in a magnetic recording medium (*Figures; col. 3, lines 28 – 35 and examples*).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Kevin M. Bernatz
Patent Examiner

July 23, 2003